

TISSUE CHARACTERIZATION WITH 40 MHZ INTRAVASCULAR ULTRASOUND IMAGING CAN PREDICT TRANSIENT NO REFLOW PHENOMENON DURING CORONARY INTERVENTION

i2 Poster Contributions

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Background: It is difficult to predict this phenomenon from grey-scale intravascular ultrasound (IVUS). "iMapTM" is new software for assessing plaque composition from data obtained by 40 MHz IVUS imaging. The aim of this study was to evaluate the plaque characteristics that predispose to the no-reflow phenomenon during percutaneous coronary intervention (PCI).

Methods: Ninety-five consecutive patients underwent 40 MHz IVUS, including 33 with acute coronary syndrome. Plaque volume was calculated by IVUS and plaque components were detected by iMap software. Then plaques were characterized as fibrotic, lipidic, necrotic, or calcified. Correlations among plaque characteristics and the slow flow phenomenon were analyzed.

Results: No-reflow phenomenon during PCI was observed in 11 patients (11.6%). Both the absolute volume and percentage of necrotic plaque were significantly higher in the no-reflow group than the normal flow group (43.3 ± 33.5 mm³ vs. 20.1 ± 17.2 mm³, $P=0.0004$, $19.7 \pm 5.1\%$ vs. $14.6 \pm 8.3\%$, $P=0.047$). Receiver-operating characteristic analysis showed that the necrotic plaque volume and necrotic plaque ratio were significantly better predictors of no-reflow during PCI compared with total plaque volume. The cut-off value of necrotic plaque volume for predicting no-reflow was 21.6 mm³ (sensitivity of 81.8% and specificity of 61.9%).

Conclusions: Characterization of plaque by IVUS with iMap analysis may predict transient no-reflow phenomenon during PCI.

